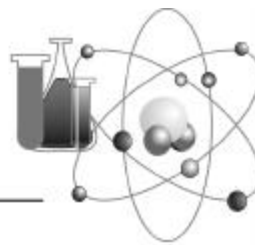


FACTS ON FILE EMSP

Environmental Management Science Program



Project Highlights

The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. This fact sheet highlights just one.

Colloidal Agglomerates in Tank Sludge: Impact on Waste Processing

During processing of radioactive wastes, insoluble sludges consisting of submicron colloidal particles can clog transfer lines or interfere with solid-liquid separations. The scientific principles of greatest utility in characterizing, understanding, and controlling the physical properties of sludge suspensions fall in the realm of colloid chemistry. This project focuses on (a) understanding the factors controlling colloidal agglomeration under expected high level waste processing conditions; (b) determining how the agglomeration influences physical properties relevant to waste processing including rheology, sedimentation, and filtration; and (c) developing strategies to control agglomeration phenomena leading to optimized waste processing conditions for retrieval, transport, separation, and immobilization operations.

Locations: Pacific Northwest National Laboratory, Oak Ridge National Laboratory, Sandia National Laboratories, and University of Washington

Year of Award: 1996

Amount of Award: \$1,788,000

Office of Environmental Management (EM)
Problem Area: High Level Waste

Office of Science (SC) Scientific Category/Sub-Category: Inorganic Chemistry/Solid/Solution Chemistry

Research Value/Impact: Significant findings for this project include: transmission electron microscopy of actual wastes shows that most sludges consist of agglomerates of submicron primary particles of hydrated oxides and insoluble salts. Model colloid suspensions for this work were selected to duplicate the compositions and particle morphologies in actual waste.

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<http://www.em.doe.gov/science> or
<http://www.id.doe.gov/emsystems/emsp>

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